

35. (new) An auxiliary power unit assembly on an aircraft, the assembly comprising:
an auxiliary power unit housed within a compartment of the aircraft, the auxiliary power unit including at least a compressor portion and a gas exhaust end; and
an exhaust eductor in communication with the exhaust end of the auxiliary power unit, the eductor including:
a nozzle disposed downstream of and in fluid communication with the auxiliary power unit exhaust end for receiving a gas exhaust flow from the auxiliary power unit in use;
a mixing member in fluid communication with the nozzle and a source of secondary air, the mixing member adapted to introduce secondary air into the gas exhaust flow; and
a bleed nozzle in fluid communication with the auxiliary power unit compressor portion and the nozzle, the bleed nozzle adapted to introduce pressurized air from the compressor portion into the exhaust flow, wherein the bleed nozzle introduces pressurized air into the nozzle at a position upstream of where the mixing member introduces secondary air into the nozzle.
36. (new) The auxiliary power unit assembly of claim 35, wherein the mixing member is disposed around the nozzle.
37. (new) The auxiliary power unit assembly of claim 35, wherein the bleed nozzle is disposed around the nozzle.
38. (new) The auxiliary power unit assembly of claim 35, wherein bleed nozzle is disposed on the assembly upstream of the mixing member.
39. (new) The auxiliary power unit assembly of claim 35, wherein the secondary air passes through an oil cooler before entering the nozzle, the oil cooler communicating with a source of auxiliary power unit oil.
40. (new) The auxiliary power unit assembly of claim 35, wherein the secondary air is drawn from at least one of one of compartment air and air outside the aircraft.
41. (new) An eductor comprising:
a mixer for receiving a flow of high velocity exhaust gas from a gas turbine engine, the mixer including an annular plenum circumscribing and communicating with the mixer, the plenum having an inlet for receiving a flow of cooling air and an outlet for providing the flow of cooling air to the mixer, the flow of cooling air having a velocity substantially less than the exhaust gas, a duct downstream of the mixer for receiving and mixing the high velocity gas and cooling flows, and means for injecting a flow of pressurized air into the eductor upstream of the mixer.
42. (new) An exhaust eductor for a gas turbine engine, the eductor comprising:
a mixer adapted to receive and mix a flow of gas turbine exhaust gas from a gas turbine engine and a flow of cooling air having a velocity substantially less than said exhaust gas, and

means for injecting a flow of high pressure gas into said mixing duct upstream of said mixer.

43. (new) The exhaust eductor of claim 42, wherein cooling air is supplied to the mixer from a plenum circumscribing the mixer.

44. (new) The exhaust eductor of claim 42, wherein the mixer comprises an annular duct for receiving said flow of gas turbine exhaust gas from a gas turbine engine, and further comprises mixing lobes for introducing said flow of cooling air into said flow of gas turbine exhaust gas.

45. (new) The exhaust eductor of claim 44, wherein the mixing lobes introduce said flow of cooling air substantially along a mixing plane, and wherein the means for injecting said flow of high pressure gas is upstream of said mixing plane.

46. The exhaust eductor of claim 44, wherein the mixing lobes are disposed around the duct.

47. The exhaust eductor of claim 42, wherein the means for injecting a flow of high pressure gas comprises a bleed nozzle circumscribing the duct.

48. The exhaust eductor of claim 44, wherein bleed nozzle is disposed on the eductor upstream of the mixing lobes.

49. The exhaust eductor of claim 42, wherein the cooling air passes through an oil cooler before entering the mixer, the oil cooler communicating with a source of oil.

50. An aircraft auxiliary power unit exhaust eductor assembly comprising:
a first duct for receiving a first flow of gas from an aircraft auxiliary power unit,
a second duct surrounding to the first duct and adapted to mix a second flow of air into the first flow at a first region of the first duct;
a third duct surrounding the first duct and adapted to deliver a third flow of air to the first duct at a second region of the first duct, the second region being upstream of the first region.